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ABSTRACT

The educational literature provides evidence of the increasing role of community colleges in serving business and industry. By providing pre-service education for persons entering the labor market or continuing education for employed individuals who seek skills upgrading, community colleges have made businesses a major consumer of college services. This literature review begins with an overview of community college services to business clients, which include instructional services such as customization and non-vocational courses, and non-instructional services such as assessment, grantsmanship, technology transfer, and consulting services to small and new businesses. The role of the community college in economic development is also examined. Next, research on administrative factors is summarized, showing a great deal of variance between institutions in the number and types of services provided by community colleges to business and industry. State surveys are cited which provide further evidence of this uneven service pattern, indicating that while all community colleges provide at least some assistance to business, most of these services are accounted for by a relatively small number of colleges. Factors which influence community college involvement with business and industry are identified, including program management, state support, the health of the local economy, and staffing. The next section reviews papers and reports considering the effectiveness and benefits of business/industry partnerships. The final section provides a summary of the issues. A 36-source annotated bibliography and a list of 25 selected dissertations are included. (JMC)

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How Do Community Colleges Serve Business and Industry? A Review of Issues Discussed in the Literature

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June 1990

Prepared for the

American Association of Community and Junior Colleges

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How Do Community Colleges Serve Business and Industry? A Review of Issues Discussed in the Literature

Part One: Introduction

Community colleges have long served business and industry, if only indirectly, by providing pre-service education for persons entering the labor market or continuing education for employed individuals who seek skills upgrading. The focus of this indirect service is student development. The business community has always influenced the curriculum through tuition reimbursement plans that encourage employee enrollment in college programs, through participation on advisory committees that oversee vocational curricula, or through participation in cooperative education and apprenticeship programs that include on-the-job training. Nonetheless, individual students have remained the colleges' primary clientele. By contributing to their development through both general education and vocational training, colleges help shape and retrain the labor force upon which business and industry leaders rely.

Over the past 15 years, however, the task of economic development has been added to the task of student development, with the result that businesses themselves have become a major consumer of college services. Besides serving as a school-to-work linkage for youth or as a convenient site for adult, continuing education, many community colleges attempt to shore up local economies by attracting new

businesses to their service districts, helping faltering businesses remain competitive, or serving as a source of information on economic or technological developments that affect production or the market place. Many college leaders and state policy makers now view the ability to retain or add jobs to local economies--and to bolster the nation's economic stance generally--as a primary way in which community colleges relate education to work.

Much of the literature on community college services to business is exhortative, calling for an increased college role in economic development. Contributors to this literature include community college leaders who see college-business collaboration as a cornerstone of the institution's mission and as a primary mechanism for increasing the colleges' social utility. AACJC president Dale Parnell has been the foremost advocate of expanded institutional involvement with business, noting that the

> "evolution from preparing the work force for business (student as client) to conducting customized job training programs for commerce and industry (making the business the direct client) demonstrates the colleges' willingness to assume part of the burden for helping the U.S. be competitive in that world market" (Parnell, in a preface to Doing Business with Business by Hamm and Tolle-Burger, 1988, p. 2).

Anthony Zeiss, president of Pueblo Community College (Colorado), also figures prominently among those calling for

greater college-business collaborations. Linkages with business, he writes,

> could be the vehicle that erases the identity problem of community, technical, and junior colleges that has so long endured. . . .By examining their frame of reference, focusing on a target market, and promoting a point of difference, community colleges can easily become recognized as a vital part of their communities, states, and nation. Specifically, community colleges should take advantage of this opportunity to help business and industry while helping themselves by developing a vendor-of-services attitude, focusing on economic development via human development, and promoting their unique ability to support business and industry in a responsive and responsible manner. (Zeiss, 1989, pp. 3-4)

The National Council of Occupational Education, made up of community college occupational educators nationwide, has also been a strong advocate. College service to business, the Council argues, is a common-sense measure that meets the needs of state policy makers, business leaders and the colleges alike:

> Legislators like it because business and professional groups do; business and industry like it because it leads to cost reduction and higher profits; economic development agencies like it because it makes their job easier; and colleges like it because it sustains or increases enrollment (Task Force on the Role of Community Colleges in Economic Development, 1988, p. 105).

Through these and other calls for direct action in economic development, community college leaders have challenged their peers to make service to business a top institutional priority.

As colleges respond to this challenge, a growing body of descriptive and evaluative literature has been added to the leaders' calls for action. Much of this literature is testimonial in nature, describing the efforts of individual colleges to assist area businesses; examples include Day (1984) and Liston (1986). Collections of case studies constitute another important category in the literature, illustrating the many approaches used by colleges and state college systems to serve the business community. Those who have compiled case studies include Thomas (1989), Warmbrod and Liming (1987), the College Entrance Examination Board (1984), and Mahoney (1982). State and national surveys of community colleges, including those reported by Day (1985), Linthicum (1985), and Cohen (1987), also contribute to our knowledge of these services and provide insights into how service to business fits into the overall community college mission. A fourth category includes works that examine college-business collaborations from an administrative viewpoint and provide advice for those who are starting a college program for business clients; Connor (1984), Kopecek (1984), and Hamm and Tolle-Burger (1988) are examples. Finally, state data reports, such as those compiled by the Illinois Community College Board (1988) and Hanna and others (1989), provide indicators of the number of businesses served by community colleges and the number of employees who undergo training. This growing literature, reviewed on the following

pages, provides evidence of the types of services community colleges offer their business clients, the ways in which those services are offered, and, to a smaller extent, the educational and other outcomes associated with those services.[1]

Part Two:
Types of Services Provided to Business Clients

Community college services to business clients are not confined to instruction. Just as colleges provide individual students with counseling, tutorial assistance and other support services that augment classroom learning, college programs for business clients often include consulting, trouble shooting, and other non-instructional support. Sometimes the college expands its role to include business and commerce advocacy, with the college itself serving as the community's primary agent for attracting new businesses, encouraging the expansion of existing industries, and bolstering the competitiveness of those companies that are faltering. In light of the variety of activities involved, community college leaders often view service to business as "a continuum, starting with education and training, leading into more service-oriented activities, and concluding with

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[1]The literature reviewed here does not include dissertations. For a listing of selected dissertations examining the community college role in fostering economic development through service to business, please see the appendix.

business and economic development leadership within the community" (Hamm and Tolle-Burger, 1988, p. 11).

Educational Services

Educational services, those resting on instruction leading to student competency in defined skills, take a variety of forms depending on the needs of the business client. Stone and Manion (1988) point to two defining characteristics of these services. One is the degree of customization. Some courses are fully customized to meet the unique needs of a business client and would not be applicable to employees in other firms. Others are "standardized" courses, those taken off-the-shelf from the regular curriculum open to all students. In between are what Stone and Manion call "individualized courses," including courses from the regular curriculum that have been modified in some form to meet the needs of the business client. The second defining characteristic is the degree of vocationalization. Some instruction provided to business clients deals solely with job skills, while other courses focus on basic skills, the liberal arts and sciences, and other areas that can be applied to almost any work site. Often, courses combine

vocational courses with general studies, especially in the case of cooperative or apprenticeship programs.[2]

Customization

To date, no national data are available on the degree to which community college courses offered to business clients are developed specifically for those clients or, alternatively, drawn from the courses already available in the colleges' credit or noncredit curricula. In one statewide study, Willson and Anderson (1986) found that 44 percent of the courses offered to business clients by the California community colleges on a contract basis were drawn from the colleges' regular curricula and that an additional 35 percent were modifications of existing courses. Case studies from individual colleges support the hypothesis that "canned" courses often meet the needs of business clients, suggesting that college services to the business community

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[2]Stone and Manion (1988) point out that administrative factors (discussed later) constitute a third defining characteristic. Is the business client a new or expanding industry, thus qualifying the instructional program for state subsidies that encourage economic development? If not, who pays for the instruction: the college, the client, or the client's employees? Where will the instruction take place: at the college, at the work site, or at some other location? Who will be the instructors: college faculty, company trainers, or outside consultants? Will the students be able to earn college credit for the training they receive? How will that training be evaluated? Administered in any number of ways, instructional services to business clients cover a wide variety of subject areas.

sometimes take the form of an extension program, with selected college courses offered as needed at the work site.

Warmbrod and Liming (1987) provide an example in their case study of the Business, Industry, Government Division of Tennessee's State Technical Institute at Memphis (STIM). STIM uses many of its regular credit courses for business clients with the following a rule of thumb: "if the company's needs require adjusting standard courses beyond the maximum of ten percent change, the institute compensates the instructor either to revise the course or design a new one" (Warmbrod and Liming, 1987, p. 44). In one instance, the Division conducted a needs assessment for International Harvester in the area of blue-print reading. The Division found that "although special expertise was needed on the use of measuring instruments, this need for expertise was not enough to warrant a special course" (Warmbrod and Liming, 1987, p.44). A section on instrumentation was therefore added to the college's standard blueprint reading course, which was then used to train International Harvester employees.

In another example, Day (1984) describes the effort of Dundalk Community College (Maryland) to develop a two-semester program of study that would prepare hourly employees at Bethlehem Steel's Sparrow's Point facility for new roles within the plant's revised maintenance system. Using the DACUM[3] curriculum development model, the college defined the

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[3]DACUM = "Developing a Curriculum"

general competencies needed by workers in these new roles, specified the skills needed within each competency area, and developed courses accordingly. About 90 percent of these courses had to be specially designed for the company, but another ten percent could be drawn, with some modification, from the college's curriculum. The Dundalk experience shows that even in those cases that demand high correlation between instructional content and work place competencies, at least some of the business's instructional goals may be met by courses that have already been developed and taught at the college.

Non-Vocational Courses

While it is of course true that business clients seek instructional services that are tied to job-related tasks performed by employees, these services do not exclude basic skills instruction or general education built on the liberal arts and sciences. In some cases, the college helps its business client by providing instruction in fundamental reading, writing, and computation skills. In other cases, college services take the form of apprenticeship or cooperative education programs that lead to the associate degree. Here the college meets the training needs of the business client while at the same time providing individual employees with a more rounded program of study that could serve as a springboard for further education.

Because community colleges generally have considerable experience in basic reading, writing, and mathematics instruction, businesses often turn to the colleges for assistance in boosting employee literacy development. Warmbrod and Liming (1987, pp. 93-98), for example, describe the efforts of North Carolina's Forsyth Technical College (now Forsyth Technical Community College) and Austin Community College (Texas) to provide literacy training for employees at (respectively) the R.J. Reynolds Tobacco Company and Texas Instruments, Inc. In both instances, the colleges provided basic skills courses at the company sites. The Forsyth program focused on reading instruction for the illiterate, while the Austin program encompassed a wider range of services, including adult basic education, English-as-a-second-language instruction, and general education development (GED) courses.

Apprenticeships and cooperative education programs go beyond basic skills instruction and bring the college's general education and liberal arts curricula into the service of business clients. Renz and Styer (1986) provide an example in their description of the industrial instrumentation program operated jointly by San Juan College (New Mexico) and the San Juan Generating Plant of the Public Service Company of New Mexico. Concerned that the college's instrumentation classes were not meeting the specific needs of apprentices at the generating plant, the college and the

Public Service Company entered into an agreement whereby in-plant instrumentation instruction provided by company trainers would be augmented by college courses in electronics, composition, technical writing and speech. The company trainers were hired as adjunct faculty, and the college awarded cooperative education credit to students completing on-the-job instruction. Completion of these credits, along with those earned at the college, led to the award of the associate in applied science degree. Other, similar programs described in the literature include the community college apprenticeship programs for naval shipyard workers (Cantor, 1988) and the Chrysler Dealer Apprenticeship Program for mechanic trainees (Conklin, 1987).

Apprenticeship or cooperative education programs often require negotiation and compromise on the part of both the college and its business client. For their part, colleges may have to give way on degree requirements or bureaucratic regulations that make it difficult for corporate employees to participate. Cantor (1988), for example, notes that regulations governing out-of-state tuition rates were often a problem for community colleges and technical institutes involved in establishing associate degree programs for apprentices at naval shipyards. Because employees at each shipyard often lived in several states, special arrangements had to be made for all apprentices to pay the in-state tuition rate charged by the community college contracting

with the shipyard. Business clients, on the other hand, must recognize the broader, societal obligations of the college. Conklin (1987) argues that while business clients must have a strong hand in developing and managing apprenticeship or cooperative education programs, colleges have an obligation to assure that affirmative action goals are met in the student selection process and that the program includes a strong general education component that will assist students transfer on to the baccalaureate, should they decide to do so at a later point. A weak point of the Chrysler Dealership Apprenticeship Program, he maintains, is the fact that the apprentices--who alternatively attend college for two months and then work at a dealership for two months--take college courses together and do not mix with other students. The danger here, he warns, is that the apprentices' general education may be so heavily geared toward their own specific needs that they do not receive a sufficient grounding in the arts and sciences disciplines.

Non-Instructional Services to Business Clients

Besides describing instructional programs provided for business clients, much of the literature deals with the community college role in providing non-instructional services that promote the competitiveness of local industries. Several services are mentioned, some as adjuncts

to instructional programs and others as self-standing components of the colleges' overall plan to serve the business community. The non-instructional services offered by community colleges often place the institution at the head of local economic development activities, orchestrating the efforts of local agencies to meet the needs of business and industry.

Assessment

One type of service falls within the realm of assessment. Long accustomed to testing the skills of entering students, community colleges often extend their expertise in this area to business clients. Sometimes assessment is used to screen employees participating in company training programs. For example, Day (1984) notes that besides developing a curriculum for workers at Bethlehem Steel's Sparrows Point Plant (see pages 8-9, above), Dundalk Community College (Maryland) employed its counseling and testing division to develop assessment instruments that could identify employees who needed remedial reading and writing instruction before beginning the program of study. In other cases, assessment services help screen applicants for jobs at client businesses. Moorman and Ruthain (1989), for example, describe the McDonnell Douglas system for pre-employment assessment, noting that community colleges often

manage the assessment process in conjunction with JTPA (Job Training Partnership) agencies:

> McDonnell Douglas approaches the local community college and JTPA agency in a location where it has a plant or plans to build one. Corporate officials discuss their need for pre-employment assessment and screening and the exact system they want used. The local community college is asked to design an assessment program to meet the specified needs. Next, McDonnell Douglas asks the local JTPA agency to commit funding to the community college's assessment center to help defray the obvious costs of expansion. (Moorman and Ruthain, 1989, p.76)

Moorman and Ruthain point out that both McDonnell Douglas and the community colleges benefit from this arrangement. The company is spared the cost of duplicating assessment services that are already available at the community college. For its part, the college knows that "one of the community's major employers is willing to make a commitment to hire the majority of its non-exempt and hourly employees from among those who pass through the college's assessment center" (p. 76). The college also enjoys public relations advantages and may find that the McDonnell Douglas assessment program helps recruit new students.

Grantsmanship

Grantsmanship constitutes a second service area, with community colleges helping local businesses compete for state or federal contracts. The Illinois Community College Board (1988), for example, reports that the state's community

colleges provided contract procurement assistance to 2,966 firms in 1987-88. This assistance, including workshops and counseling on bid preparation, helped Illinois firms obtain government contracts worth an estimated $35,600,000 (Illinois Community College Board, 1988, p.4). Community colleges also help businesses obtain state economic development grants that can subsidize training costs. For example, Carl Sandberg Community College (Illinois) worked with the Admiral Corporation and the local JTPA (Job Training Partnership Act) agency to obtain a state grant used to underwrite the training costs incurred by Admiral in expanding its operations within the college's service district. In this case, the business client was spared the effort of negotiating the state's bureaucratic maze. As Ludwig (1984) notes, "The Admiral Corporation experience is an example of the new partnership concept in Illinois where local agencies work together to provide the maximum number of options for private business with as little red tape as possible" (pp. 6-7).

Technology Transfer and Information

A third area encompasses technology transfer and research, with colleges helping businesses obtain information on markets or new production technologies. Katsinas and Lacey (1989) provide examples in their case study descriptions of the Mid-Florida Research and Business Center

at Daytona Beach Community College and the Office Automation Center at Trident Technical College (South Carolina). In addition to providing entrepreneurship training for the unemployed and assistance to small businesses, the Mid-Florida Research and Business Center contracts with private and public organizations to conduct business-related research projects. Such projects have included "a study comparing the business climates of sixteen Florida counties, a survey of employers' short- and long-range hiring needs for Volusia County (Daytona Beach), a health care impact study for a large local hospital, [and] studies for local industrial development boards" (Katsinas and Lacey, 1989, pp. 31-32). Trident Tech's Office Automation Center also provides businesses with information, but in a simpler, more focused manner. The Center makes space available to vendors of office automation equipment for the purpose of displaying and demonstrating their new products. Local businesspeople are invited to come in and familiarize themselves with the equipment with the goal that they will make informed and cost-effective purchasing decisions. No sales are allowed at the Center.

Service to Small or New Businesses

Consulting for new or small businesses constitutes a fourth service area. Often administered from specially-developed "small business centers" or "business incubators,"

these services are designed to assist the local economy by lowering the traditionally high failure rate of small businesses or helping new industries get off the ground. Examples cited in the literature include the Meyers Center for Small Business at Colorado's Pueblo Community College (Katsinas and Lacey, 1989, pp. 34-35), the Education and Training Center at Green River Community College (Green River Community College, 1986), and the various business centers and incubators described by Thomas (1989) in her Portfolio of Community College Initiatives in Rural Economic Development. These centers provide a number of services, including one-on-one counseling, assistance in developing finance and marketing plans, management seminars and workshops, and the provision of office, retail, or industrial space at lower-than-market rental rates.

Often these centers are the focal point of local economic development, demonstrating the willingness of many community colleges to take a leadership role in business growth. This is particularly true in rural areas where college services to business depend less on the training needs of large industries than on the need to serve numerous small businesses and farms. Thompson's collection of case studies from rural community colleges suggests that these institutions serve as community organizers as well as providers of educational services. For example, Labette Community College (Kansas) took a leading role in responding

to anticipated job losses in its community by developing a Business Industrial Center that provides new enterprises consulting and low-cost space. As Thomas (1989) notes, the Center was a product of the college's ability to muster community support and secure funding:

> In 1986, the area's unemployment rate was around 7 to 8 percent, and the MKT Railroad . . . was going to merge with Union Pacific Railroad. The merger would greatly reduce rail operations in Parsons and result in a loss of 400 jobs. A study conducted for Labette Community College indicated the total loss of income from the railroad merger would be $10 million to $12 million. . . .
>
> Labette Community College decided to respond to the economic decline in a proactive manner. . . .The president of the college called together a core group of area representatives to put together a plan of action to stem the loss of the MKT merger. . . .They quickly focused on the recommendations of the impact study, which suggested the creation of a business incubator to encourage business development. . . .
>
> The college was selected as the organization to start and operate the incubator because of its leadership and because it represented a larger area than just one community or county. The college approached the U.S. Economic Development Administration (EDA) Denver regional office about the possibility of a grant to help fund the incubator. . . . (Thomas, 1989, p. 38)

Other examples cited by Thomas (1989) include the following:

- The Business and Economic Development Institute at Danville Area Community College (Illinois) which provides symposiums on economic development issues and serves as a meeting ground for business leaders and others interested in promoting economic growth;
- The Small Business Development Center at Spoon River Community College (Illinois) which worked with local farmers to plan and organize the Spoon River Growers Cooperative; and

- The Business and Industry Assistance Center at Northeast Community College (Nebraska) which helped organize a local venture capital network.

The Community College As Catalyst for Economic Development

The examples provided by Thomas (1989) show that for many colleges, business enterprises have clearly become a major focus of the community service mission. These institutions view themselves as agencies of community renewal, responsible not only for education and service, but for the economic well-being of the community as a whole. If venture capital is needed, they will help the community obtain it. If a local company wants to expand its operations, then the college will seek out grant monies that may help defray the associated training costs. If unemployment is rising and the economic climate turns downward, then the college will bring together government agencies, businesses, and community leaders in an effort to seek solutions. Many colleges, in short, take responsibility for community action leading to an improved business environment. They are catalysts for economic development.

It is hard to say exactly how many colleges take on this catalyst role. The boundary between education and service on the one hand and community leadership on the other is not distinct. But despite the examples of strong college

leadership cited in the literature, it should be remembered that most college services to the business community fall within the traditional realm of instruction, usually within the credit curriculum.

Surveys of community college economic development activities bear this out. The National Council for Occupational Education, for example, asked community colleges nationwide to indicate if they participated in any of 57 activities designed to boost local economies (Task Force on the Role of Community Colleges, 1988). The results, detailed in Table One, are difficult to interpret because the listed activities are vaguely worded. (How, for example, should we interpret such activities as "Advise business and industry on training methods," or "Maintain technical library?") But they suggest that activities associated with non-instructional service and leadership are least likely to be undertaken, while those associated with instruction are most commonly undertaken. Indeed, less than 30 percent of the responding colleges housed an economic development agency or helped businesses obtain grants and contracts. In contrast, over 80 percent sponsored customized, in-plant training for employees of business clients or otherwise provided supplemental training for employees. Currin and Sullins (1988) had similar results in their survey of 237 small, rural community colleges in the southeast. The activities

Table One

Economic Development Activities Undertaken by Community, Technical, and Junior Colleges

Activities Most Frequently Reported (80% or more of the colleges):

- Structure curricula relevant to manpower needs of local economy
- Establish linkages with economic development agencies, including chambers of commerce
- Seek cooperative ventures (financial or nonfinancial) with business, industry, labor, or other agencies to train employees
- Offer comprehensive job prep certificates and degree training programs
- Prepare individuals to obtain a professional license or certificate
- Provide supplemental training for employees
- Prepare workers for career changes
- Assume responsibility for targeted client populations (WIN, JTPA, displaced homemakers, minorities, etc.)
- Retrain displaced workers
- Provide training facilities for use by business and industry
- Publicize involvement in economic development
- Provide cooperative education opportunities in conjunction with business and industry
- Secure federal/state grants to conduct job-specific training for an individual business or industry
- Use the JTPA to further local economic development
- Promote educational/cultural services which appeal to prospective employees of new or expanding business or industry
- Advise business and industry on training methods
- Provide college placement services to students, alumni, business and industry
- Sponsor customized, in-plant training for employees

Activities Least Frequently Reported (30% or less of the colleges):

- Appoint economic development committee
- Advise alumni on economic development activities
- Develop master plan for economic development
- House economic development agency
- Train business, government, or community-based agencies to prepare grants or obtain contracts

Table One, continued

- Assist businesses to realize their international trade opportunities
- Assist industry to achieve equal access objectives of employment
- Serve as catalyst to establish local trade or professional associations
- Lease training equipment to business and industry

Source: Task Force on the Role of Community Colleges, 1988

most frequently mentioned focused on educational services, while the least-undertaken activities included non-instructional services associated with a strong college role in economic development (see Table Two).

These findings should come as no surprise. Community colleges are, after all, educational institutions whose foundations are teaching and learning. Even those colleges noted for service to the business community often do not go beyond instruction to take on the role of economic development catalyst. In their survey of 72 colleges with business/industry collaborations, Day and Rajasekhara (1988) found that few gathered sufficient information on the economic health of their service districts:

> Many colleges had very little idea beyond rough estimates as to the texture of their economic community. It was the rare college that was able to identify the major employers of its community let alone employer education training needs. In this sense, many colleges do not appear to have appreciated the notion that they can play a key catalytic role in the economic development of their communities. . . . (p. 52)

Table Two

Economic Development Activities at Rural Community Colleges in the Southeast

A. Activities Most Frequently Reported (70% or more of the colleges):

- Provide basic skills training
- Provide career and vocational counseling
- Job placement services for students enrolled in community colleges
- Participation of community college staff on local economic development councils
- Provide short courses and workshops for company employees
- Provide skills upgrade training for employed persons wanting to keep pace with changing technology or desiring to change positions
- provide training in basic and mid-level management skills
- Cooperative education
- Customized training
- Community college staff participation in industry recruitment
- Conduct retraining for persons who have been laid off

B. Activities Least Frequently Reported (30% of the colleges or less):

- Sponsor, coordinate, or train local development leaders and organizations with regard to rural economic development
- Disseminate research results on technical change and business research to regional businesses
- Operate small business development centers funded by the Small Business Association
- Provide staff to solicit funds for retraining programs
- Provide consultation in export management
- Provide screening and skills assessment of potential employees for business

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Source: Currin and Sullins, 1988

Part Three: Administrative Factors

As the above-mentioned surveys indicate, there is a great deal of variance between institutions in the number and types of services provided by community colleges to business and industry. State surveys provide further evidence of this uneven service pattern, showing that while all community colleges provide at least some assistance to business, most of these services are accounted for by a relatively small number of colleges:

- In Maryland, Linthicum (1985) found that two of the states 17 community colleges accounted for 89 percent of all associate degrees awarded in programs that were specially designed for business clients. She also found that five colleges (which account for approximately 50 percent of the state's total community college enrollment) accounted for 82% of all enrollments in non-credit, state-funded courses offered for business and industry. Pinkey (1988) revealed a similar pattern in his survey of continuing education at the Maryland community colleges; five of the colleges accounted for 68 percent of all apprentices enrolled in the community colleges, and another five accounted for 67 percent of all enrollments in courses offered to business on a contracted basis.

- In Kansas, Gainus and others (1987) found that three institutions served 42 percent of all the businesses served by the state's 21 community colleges in 1985-86. Three other institutions accounted for 51 percent of all the employees served in programs for business clients.

- In Illinois, six of the state's 43 community colleges accounted for 44 percent of all business employees served in customized training programs subsidized by economic development grants awarded by the Illinois Community College Board. (Illinois Community College Board, 1988)

- In Texas, just over 25 percent of all community college programs offered in 1985-86 with a work site component (either through apprenticeships, cooperative education arrangements, internships, or some other arrangement) were offered by only three of the state's 70 two-year institutions. (Glover and Shelton, 1987)

While state data reports are scarce, they clearly support the hypothesis that some colleges are more involved in business-related services than others. Some of this variance may be accounted for by institutional size and by the diverse business communities served by different colleges. For example, state reports detailing the number of employees served in contracted courses probably understate the role played by small, rural colleges in serving business and industry. But other administrative and financial factors may also be at work. How the college manages its business support program will certainly have an impact. State support is another variable, along with the role assigned to community colleges in state economic development plans. The health of the local economy will also play a role, especially as it affects the training budgets of business and industry. Staff time and commitment is a fourth factor, especially in the area of customized courses and services.

Program Management

Service to business is a function that has no traditional home within the college's administrative structure. Encompassing both credit and noncredit

instruction and funded from a variety of sources, responsibility for business services varies from institution to institution, falling within many portfolios. In a survey of the 17 Maryland community colleges, for example, Linthicum (1985) found a mixed pattern of administrative responsibility for contracted courses and other economic development efforts: at one-half of the colleges the dean of continuing education was in charge; one-third of the colleges placed responsibility in the hands of training coordinators or directors of contract education; two colleges delegated business services to a separate business institute; and at one college these services were in the president's portfolio. Deegan and Drisko (1985) also found a mixed pattern of administrative control in their national survey of community college contracted education programs. They determined that contracted courses were managed by a variety of officials from academic departments, vocational departments, and continuing education programs.

Those discussing the management of college services to business often examine the pros and cons of two administrative approaches: a decentralized approach, in which individual departments or divisions are free to contract services to the business community, and a centralized approach in which service to business becomes the responsibility of a specially-designated business institute or center. The decentralized approach is

supported by those anxious to involve the entire college community in service to business. Kopecek (1984) argues that it encourages the involvement of faculty service to business, guards against the development of two distinct faculties in the same disciplines (one teaching regular courses and one teaching courses for business clients), and thus helps safeguard the academic integrity of courses offered to business clients. Those arguing for a centralized approach, however, highlight the need for an entity within the college that will be visible to the business world and able to communicate with business leaders. Connor (1984), for example, argues that the business community will have an easier time working with a college that centralizes its business services in a single office manned by generalists who can tap the expertise of faculty as needed. This approach, he notes, mirrors the approach taken by businesses, whose training offices are manned by personnel managers who contract for specialized educational services. Hamm and Tolle-Burger (1988) also argue for centralized services offered through business/industry centers, noting that they convey a sense of purpose to the business community:

> While a few colleges can demonstrate the success of adding business service to the adult and continuing education program, it will be easier to convince business of your serious commitment to them by promoting a unique and discrete unit. Another obvious advantage is the creation of very specific expectations for staff

to serve one client base without diffusing energy to other client targets (p. 13).[4]

State Support

Many college services to business are subsidized by state funds. Sometimes these are direct subsidies from state economic development agencies. For example, the Kansas Industrial Training Program matches funds from the state's Department of Commerce with federal JTPA monies to subsidize customized training provided by community colleges for new or expanding industries (Hanna and others, 1989). In other instances, however, state subsidies are indirectly received when the training provided for business clients is offered on a for-credit basis. At Piedmont Technical College (South Carolina), for example, costs for customized courses that are not eligible for direct state subsidies are sometimes absorbed by the college, thus lowering the direct cost to the business client. The college does this "by converting continuing education units (CEUs) earned by the trainees into credit units, whose costs are reimbursed under certain circumstances by the state" (Warmbrod and Liming, 1987, p. 14). At some colleges, whole associate degree programs are designed for business clients. Linthicum (1985), for example, reports that in 1983-84, approximately

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[4]For information on the management of business-industry centers, see Bevelacqua (1983) and Hamm and Tolle-Burger (1988).

3,000 students at the Maryland community colleges were enrolled in credit programs created specifically for business and industry.

Besides the ability of colleges to offer courses for credit, the question of state subsidies often rests on the role assigned to community colleges in state economic development plans. Both South Carolina and North Carolina, for example, are well known for long-standing policies that make two-year college training for new or expanding businesses a central part of state economic development efforts (Brant, 1982; Owen, 1981; Linthicum, 1985). State agencies work as partners with the two-year colleges, referring new and expanding businesses to the colleges for state-subsidized training. In other states, however, community colleges play only a peripheral role. Warmbrod and Liming (1987), for example, note that Oklahoma City Community College operates on a different environment than the South Carolina colleges: ". . . as a community college under the State Board of Regents for Higher Education, instead of the State Department of Vocational and Technical Education, OCCC is not a member of the coordinated economic development team that provides free start-up training for new industries" (Warmbrod and Liming, 1987, p. 52).[5] Thus, training provided

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[5]The Oklahoma City case study reflects policy as it affected the college in the early 1980s. Conditions may have changed since then, a hazard one always faces when reviewing the literature.

by OCCC for business clients must be conducted on a cost recovery basis.

The literature provides no comparative analysis of state economic development policies and their affect on college services to business. Individual case studies, sometimes dated, are all we can rely on. Besides South Carolina and North Carolina, other states cited in the literature as having a strong community college arm in economic development are Illinois, which provides community colleges with economic development grants to be used in customized training, contract procurement assistance, and other services to the business community (Illinois Community College Board, 1988); Ohio, which involves two-year colleges and Ohio State University in a technology transfer consortium that provides businesses with information and technical training (Linthicum, 1985); and Iowa, which provides tax incentives to new and expanding businesses and grants exclusive rights to the state's community colleges to contract for training with them (Ghanatabadi and Saylor, 1988). More recent descriptions of state subsidy programs linking economic development to community college training or services for business and industry are provided by Thomas (1989); her monograph includes case studies of state programs subsidizing community college economic development efforts in California, Colorado, Florida, Illinois, Iowa, Michigan, Nebraska, Ohio, Oregon, and Washington. In addition to

custom designed training for business, the programs described in these case studies help community colleges provide services in the areas of technology transfer, small business development, and international marketing.

Health of the Local Economy

Because businesses themselves often underwrite the training they receive from community colleges, swings in the economic health of local economies sometimes affect the level of college services to the business community. In their national survey of community colleges, Deegan and Drisko (1985) determined that while most of the responding institutions anticipated an increase in the number of contracted programs with business clients, some colleges expected a decline, because poor economic conditions would reduce the training efforts of local businesses and industries. Cohen (1987) came to a similar finding in his 1986 survey of community college continuing and adult education directors. While 67 percent of his respondents felt that enrollment in contract education programs would increase during the next five years, 33 percent foresaw declining or stabilized enrollments, in part because plant shutdowns had decreased demand for college services.

Few data are available on the total cost of college services to the business community and the proportion of that cost that is borne by business clients themselves. But those

data that are available make it clear that many of these services depend on the economic well being of those clients and the size of their training budgets. In Illinois, one of every five dollars budgeted for community college business centers and economic development activities during 1987-88 came in the form of revenues from business clients (Illinois Community College Board, 1988; see Table Three). As another indicator, Cohen (1987) found that 37 percent of the colleges that provide contracted services to business clients did so on a cost recovery basis, with businesses or their employees paying the full cost of instruction.

The large proportion of costs borne by businesses themselves presents researchers with a chicken-and-egg question: do college services promote local economic growth, or does local economic growth promote college services to business, especially customized contract education? The answer is probably not clear cut and will vary from college to college. Those institutions that can subsidize their business services with state or federal funds will probably have more leeway to develop a program for business clients--especially those operating on the margin of survivability--than colleges that must operate on a full cost recovery basis.

Table Three
Funds Budgeted for Business Center/Economic Development Activities, Illinois Community Colleges
FY 1988

Source	Amount	% of Total
JTPA Funds	$10,721,972	40.0%
Gross Revenues from Training and Services	5,071,891	19.0%
Economic Development Grants from the Illinois Community College Board	2,934,000	11.0%
Community College Budgets/Education Fund	2,189,765	8.2%
High Impact Training Services Grants	1,434,735	5.4%
Other Sources (9 additional sources)	4,318,938	16.0%
Total	26,671,301	99.6%

Source: Illinois Community College Board, 1988

Staffing

Staff commitment, as well as financial support, is an important determinant of the college's ability to serve business clients. While numerous case studies point with pride to the training partnerships developed between colleges and surrounding businesses, surveys indicate that staffing problems sometimes limit college readiness to meet business needs. Qualified personnel are always a scarce resource, but staffing limitations may be especially difficult when colleges are asked to meet the needs of the business community.

Part of the problem rests in the labor intensive nature of marketing business services and tailoring them to meet the needs of business clients. Cohen (1987) found that contracted programs for business were most often developed by individuals on the college staff who took the initiative to meet with business leaders and inform them of college services. Many of the respondents to his survey felt that they had reached the limit of their ability to provide the business community with customized training: "It takes quite a bit of effort to make contacts with local industries, convince them of the college's ability to provide employee training, develop customized curricula, and draw up training contracts. Some colleges indicated that they simply do not have the staff to expand their contract education programs" (Cohen, 1987, p. 42). Staff time is clearly a factor in the

capacity of colleges to expand services to business beyond the regular curriculum.

Another factor is staff attitude and commitment. Many college faculty are not used to dealing with the business world and may feel that the demands of business clients threaten the academic integrity of the college. The quick turnover times sometimes expected by business are a case in point. Deegan and Drisko (1985) found that "many respondents [to their survey] expressed frustration with the clients' 'need to have it tomorrow' vis-a-vis the time required for faculty to agree upon an appropriate program" (p. 15). But unfavorable faculty attitudes toward the concept of contact education generally were also cited as a problem in providing specialized services to the business community; some faculty, Deegan and Drisko were told, are reluctant to participate.

The staffing problems cited in the literature lead to two conclusions. First, service to business clients cannot be administered on a shoe-string basis. To the extent that colleges want to provide specialized business services beyond the regular curriculum, staff must be allowed to devote themselves to the task. Community colleges may need to reexamine the use of revenues earned through contracted training; these revenues, which are often used to subsidize less-profitable areas of the college curriculum, might best be plowed back into the business training effort. Second, college leaders should articulate the educational philosophy

that will guide college-business partnerships and thus assure faculty and business clients alike that the college will not compromise its academic integrity. This is not to say that service to business is necessarily anti-academic. Regular credit programs at all levels of higher education are often highly vocationalized, tying students to professions and employment opportunities in a number of industries. But the potential conflict between industry demands and the college's educational responsibilities to individual students must be recognized, especially in the area of customized training. If the college's reputation is compromised, then its services to the business community will be of little value. Kopecek (1984), though a strong proponent of college ties to business, warns that

> in the attempt to tailor the program to the firm, the firm may be allowed to exercise too much control over the scope and content of the program, with the result that focus is shifted away from the basic principles of quality education. Faculty and administration must be alert to maintaining program integrity even though the firm, a paying client, may be more interested in results than in procedure. To ignore this potential area of concern is to threaten the academic reputation of the college. (Kopecek, 1984, p. 6)

Part Four: Assessing Outcomes

Community college leaders cite a number of factors that argue for increased college service to business clients. One is the high cost of training employees to adjust to changing

technologies. Bevelaqua (1983), for example, argues that "Many places of business have neither the time not the resources to gear up to meet this need [for training] in house and still attend to other aspects of their business" (p. 22). A declining pool of young entrants to the work force has also been advanced as a contributing variable. In his foreword to Profiles in Partnerships by Day and Rajasekhara (1988), Dale Parnell writes that "The demographics tell us that the present work force is essentially the same labor pool at the nation's disposal through the year 2000. Therefore, the development unfolding [i.e., college service to business] is largely an invention of necessity. Employers are seeking . . . education delivery systems in order to maintain their competitive edge" (p. v). A third factor is economic development, defined as the ability of the college to retain or add jobs to local economies (Zeiss, 1989, p. 6), to decrease the proportion of new businesses that fail (Taylor, 1986, p. 4), or to otherwise "encourage new business activity that results in net dollar income or the infusion of money into the community" (Long and others, 1984, p. 1). All three suggest that a number of outcomes will accrue beyond student learning: businesses will save money by contracting with community colleges for needed training rather than conducting the training in-house; training conducted in collaboration with community colleges will be of a higher quality than in-

house training; work force skills will be increased, as will the competitiveness of industries that benefit from college services; business failure rates will decline; and local economies will improve generally (or at least avoid serious downturns).

Many of the arguments make sense intuitively, and case studies and anecdotal reports of college-business partnerships in the literature indicate that numerous businesses view collaboration with colleges as beneficial. Why else would businesses turn to the colleges for assistance? But the outcomes implied in these arguments are extremely difficult to verify through research. As a result, the literature exploring program effects sometimes relies on weak outcomes indicators.

One of the difficulties of researching these outcomes lies in the need to determine the relative merits of community college training versus alternative training options, including in-house instruction. Ideally, such research would involve carefully-developed quasi-experimental designs, perhaps comparing the learning of matched pairs of employee groups studying the same subject in similar working environments. But community colleges and the businesses they work with often do not have the resources or time to plan and conduct these studies. In their place, simpler indicators based on the perceptions of business clients have been used. For example, Brant (1982) surveyed

representatives of businesses who had contracted with community colleges in Ohio, New York, and South Carolina. When asked about perceived benefits, many of the representatives indicated that the training received was of a higher quality than the training they would have provided themselves using company resources.

A second problem lies in the difficulty of quantifying the impact of college services on local economic growth. Reports detailing the number of jobs saved or the amount of money infused into the economy because of community college services often ignore other variables that affect economic growth. The Illinois Community College Board (1988), for example, estimates that 38,424 jobs were either created or saved as a result of community college economic development efforts in 1987-88 (see Table Four). In Colorado, Pueblo Community College determined that its small business center had a measurable, direct effect on the local economy:

> Final estimates of the overall impact found that in its [first] five years of operation, the Meyers Center for Small Business. . . had in all probability led to the creation of sixty-four new small businesses and to the assistance or survival of seventy-five existing small businesses, with a combined work force of 319 full-time and ninety-two part-time jobs. The direct annual salaries of these jobs were a little more than $5.5 million, with an annual total impact on the economy of about $10 million. (Katsinas and Lacey, 1989, pp. 35-36)

Table Four

Jobs Created and Retained With Assistance of Community College Economic Development Activities
Illinois Community Colleges, 1987-88

Activities	No. Firms Assisted	No. Jobs Created	No. Jobs Retained	Total No. Jobs
Customized Job Training	1,468	2,348	19,025	21,373
Etrepreneur-ship, Small Business Seminars, Management Assistance	1,284	2,899	2,547	5,446
Contract Pro-curement Assistance	2,566	263	427	690
Industrial Retention, Attraction, Expansion	253	5,625	4,679	10,304
Small Business Incubators	111	457	154	611

Source: Illinois Community College Board, 1988, p. 6.

By citing these numbers as cause-and-effect outcomes, college leaders may unwittingly claim credit for phenomena over which they have only little control. This is a two-edged sword, placing colleges in a favorable light during economic upswings, but leaving them vulnerable to undue criticism when--for a host of reasons--the economy takes a plunge.

A third, related problem is the tendency to focus on goals rather than measurable objectives. The former represents the desired end--a healthier economy--toward which college services contribute. The latter is properly based on increases in employee skill levels or productivity and thus measures the effectiveness of the way a college makes its unique contribution: skills upgrading through teaching or consulting services. Focusing on the larger issue of economic development, the literature is silent on the issue of instructional effectiveness and thus provides colleges and business clients alike with little guidance on where college partnerships have been successful in raising employee skill levels and where they have been less successful.

It should be noted that research problems in the area of educational outcomes are not unique to college-business services. Data on transfer rates or on the job-obtainment rates of vocational program graduates are as scarce as reliable data linking college-business partnerships to economic development. Community college educators are

doers, not researchers, who often have neither the resources nor the expertise to conduct in-depth analytical studies yielding data that go beyond the anecdotal evidence so often cited in support of college programs. While the endorsement of satisfied business clients cannot be dismissed out-of-hand, more reliable indicators of college economic effects are needed. This may require university-based researchers to join with their community college colleagues in assessing economic development efforts.

Part Five: Summary

It is difficult to draw a national, composite picture of community college services to business clients. The literature is scattered, based largely on case studies or descriptions of individual college efforts. Inconsistent definitions pose another problem. Those writing about college services to business variously describe a host of activities undertaken under different rubrics, including "economic development," "college-business partnerships," "customized training," or "contract education." A final difficulty lies in the diverse nature of the colleges themselves; each serves a community with unique economic, political, and administrative influences that will shape the college-business relationship. Nonetheless, several themes

running through the literature help explain the issues surrounding college service to the business community.

One theme is diversity, evident in the wide range of services offered. While training is sometimes customized to meet the unique needs of the client, colleges often extend their regular credit curriculum (perhaps with some modification) to the work site. Because so many types of services are offered, it is not always possible to distinguish the part of the curriculum that is devoted to regular credit students from that which is targeted for business clients. Much of the training provided to business clients can be credentialed, either through a certificate or an associate degree.

A second theme is institutional effort, evident in the fact that the colleges themselves present a diverse service pattern. While almost all community colleges offer at least some services to business clients, data reports show that most of this effort is concentrated at relatively few institutions. Many factors, besides the institutional priorities of the president, may account for the variances in service levels between colleges. Differing approaches to the management of services to business clients may play a role, as will variances in the availability of state subsidies and in the roles assigned to community colleges in state economic development plans. Local economic conditions will also affect college services to business, especially

when businesses themselves must pay for the services they receive. Staffing is another contributing variable; some colleges may be able to commit more staff time to business services than others. Additional research is needed to determine how these factors interact with each other to affect the ability of colleges to serve the business community.

A third theme, community service, plays itself out in the non-instructional roles assumed by community colleges. Going beyond education and training, some colleges serve business clients by acting as information broker, business consultant, or chief advocate for local economic development. Little is known about the helpfulness of these services beyond the anecdotal evidence presented in case studies and descriptions of individual college programs. But it is clear that some educators, at least at a minority of colleges, view these services as an important adjunct to job skills training and other instruction.

A final theme is the need to balance the educational demands of business clients with the academic traditions and reputation of the college. The literature cites no cases in which academic standards were compromised because of service to the business community. Furthermore, the numerous instances of successful college-business collaborations suggest that the gulf between the academic and commercial worlds is not as wide as many fear it is. But the potential

for a problem remains in the background, especially in the area of customized training. Some faculty who have little experience outside of the collegiate world may fear that their academic prerogatives will be undermined by treating businesses as customers and instructional services as salable goods. Although many instructors welcome the opportunity to work with business clients, others need reassurance that the college is simply carrying out its educational role in new arenas and not becoming a corporate subsidiary.

These problems notwithstanding, the literature clearly indicates that service to business clients has been accepted by many as part of the community college mission. Community college educators have embraced service to business as a means of extending education to adults at the work place and making the college a key player in efforts to add and retain jobs in local communities. Legislators in some states have also been supportive, providing state subsidies for college services to new or expanding businesses. Moreover, college-business partnerships have been viewed by business itself as an answer to increased competitiveness in the free market, which has reinforced the link between business success and worker skill. Spurred on by the initiatives of college leaders themselves, by policy makers who link economic health with labor education, and by businesses who seek retraining for their employees, college-business partnerships have become a large, though as yet

unmeasured enterprise. More needs to be done to gauge the extent of business services, to examine the factors that contribute to their success, and to assess their effects on worker skills and productivity.

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Describes a project undertaken to involve local community colleges and technical institutes in providing classroom instruction leading to associate degrees for apprentices at shipyards operated by the U.S. Navy.

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[6]The works cited here are only those referenced in the text. The objective of this paper is to analyze themes that appear in the literature dealing with community college services to business clients. No attempt has been made to compile an exhaustive bibliography.

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Details indicators of continuing education at the Maryland community colleges during the 1987 fiscal year. Among other data, the report provides figures on (1) the number of workers in the state who use community college courses to upgrade skills or prepare for new jobs and (2) the number of businesses and employees served through contracted training.

Renz, F., and Styer, M. "Community Colleges and Apprenticeship Training: A Winning Partnership." Paper presented at the Annual Conference of the National Council for Occupational Education, San Diego, Calif., Oct. 15-18, 1986. (ED 273 347)

Describes an apprenticeship program offered by San Juan College (New Mexico) for employees at a local power plant. The program combines on-the-job training with classroom instruction and leads to the associate degree.

Stone, J. R., III, and Manion, K. J. Meeting the Needs of Business and Industry: Upgrading and Updating Employed Workers. Minneapolis, Minn.: Research and Development Center for Vocational Education, University of Minnesota, 1988. (ED 298 308)

Draws upon telephone surveys with officials in four states (as well as upon the literature) to classify the types of services community colleges provide to business clients and to examine how they are funded and administered.

Task Force on the Role of Community Colleges In Economic Development. "Community Colleges and Economic Development." Journal of Studies in Technical Careers, 1988, 10 (2), 91-106.

Reports the results of a national survey undertaken in 1985 to assess the extent to which community colleges engage in each of 58 economic development activities. The survey was conducted by the National Council for Occupational Education.

Thomas, M. G. A Portfolio of Community College Initiatives in Rural Economic Development. Kansas City, Mo.: Midwest Research Institute, 1989.

Uses case studies to examine the role of rural community colleges in bolstering local economies. The case studies reveal the colleges as centers of planning and action in economic development and not simply as vendors of instructional services. Also included are brief descriptions of state programs that help subsidize community college economic development programs.

Warmbrod, C. P., and Liming, R. A. Case Studies of programs Serving Adults. OPTIONS. Expanding Educational Services for Adults. Columbus: National Center for research in Vocational Education, Ohio State University, 1987. (ED 288 992)

Provides 61 case studies of community college efforts to serve adults at the work place. Included are examples of customized training, industrial literacy education, economic development services, apprenticeship and cooperative programs, and college-business partnership

programs designed to train employees in new technologies.

Willson, L. F., and Anderson, B. Study of Contractual Education Programs in California Community Colleges. Sacramento: Office of the Chancellor, California Community Colleges, 1986. (ED 275390)

Surveys the California community colleges to examine the extent to which they provided training on a contracted basis between July 1982 and June 1985. Summarizes data on the number of colleges providing contracted training, the dollar value of those contracts, funding sources for the contracted programs, the proportion of contracted courses that were taken off-the-shelf from the regular college curriculum, the proportion of classes that were open to the public, and the subject areas of the courses.

Zeiss, T. "Roles of Community, Technical, and Junior Colleges: Positive Image Opportunity." In T. Zeiss (Ed.), Economic Development: A Viewpoint From Business. Washington, D.C.: American Association of Community and Junior Colleges, 1989.

Maintains that community colleges have an opportunity to enhance their public image by helping area businesses and thereby bolstering local economies. Argues that community colleges should take a "vendor-of-services" attitude toward their business clients.

Appendix

Selected Dissertations on Community College Service to Business Clients[7]

Ahles, K. A. "An Analysis of Training and development for Area Manufacturers: Marketing Strategies for St. Cloud AVTI (Minnesota)." University of Minnesota, 1987. (AAC8802387)

Ballantyne, C. E. "A Model for Community Colleges to Develop Business/Industry Linkages (Partnerships)." The University of Iowa, 1985. (AAC8527953)

Boyd-Beauman, F. K. "Community College Economic Development Activities in Selected States (Florida, Illinois, Arizona, South Carolina)." Southern Illinois University at Carbondale, 1985. (AAC8526643)

Bowers, J. H. "The South Carolina Technical College System: A Study of Perceived Value for Industry Location (Development)." Clemson University, 1986. (AAC8616633)

Currin, E. C., Jr. "Involvement In Economic Development Activities by Small Rural Community Colleges." Virginia Polytechnic Institute and State University, 1988. (AAC8911047)

Griffin, W. A., Jr. "Factors in Linking Two-Year College Services with Apprenticeship Training." University of Arkansas, 1984. (AAC8426150)

Hagemeister, M. L. "Industry Based Instruction With Community Colleges In Illinois." Southern Illinois University at Carbondale, 1987. (AAC8728273)

Henry, W. B, "A Study of Community College Credit Programs Offered On Site At Business and Industry Locations." University of Colorado at Boulder, 1985. (AAC8608612)

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[7]The dissertations listed here were selected from Dissertation Abstracts International, January 1985 Through December 1989.

Holden, O. "Factors That Influenced Business, Industry, and Government Organizations When Contracting With a Community College for the Delivery of Customized Training Programs." Michigan State University, 1986. (AAC8625033)

Johnson, M. M. "The Perceptions of Community College Administrators and Industrial Managers Concerning Factors that Potentially Facilitate or Impede the Implementation of Exemplary Partnerships." Temple University, 1987. (AAC8716443)

King, J. W. "Post Secondary Institutions' Role in Meeting the Training Needs of High Technology Industries." Colorado State University, 1984. (AAC8427858)

Kingry, L. K. "The Role of Oregon Community Colleges in Economic Development as Perceived by Community College Faculty and Administrators and the Business Community Which They Serve." Oregon State Community College, 1984. (AAC8500994)

Lusk, K. J. "Variables Associated With the Success of California Community College--Business Partnerships." Claremont Graduate School, 1987. (AAC8722373)

Manning, D. O. "Responsiveness to the Community by Colorado's State System and Local District Community Colleges." Colorado State University, 1987. (AAC8808960)

Mora, P. L., Sr. "Economic Development Functions of New Jersey Community Colleges." Virginia Polytechnic Institute and State University, 1988. (AAC8910955)

Richter, W. B., Jr. "Economic Development and the American Community College: A Systems Theory Approach." University of Florida, 1986. (AAC8618668)

Rojik, K. H. "Linkages Between Business and Industry In Allegheny County and the Community College of Allegheny County, Center-North: An Evaluative Case Study (Job Training, Pennsylvania)." University of Pittsburgh, 1986. (AAC8701982)

Spencer, C. J. "Philosophical and Implementational Issues Related to Installing and Operating Cooperative Programs With Business and Industry." The Ohio State University, 1988. (AAC8824606)

Taggart, S. M. "The Problems of Managing Contract Training Courses and Programs at Florida Public Community

Colleges." The Florida State University, 1988. (AAC8822472)

Waddell, D. G. W. "Strategic Planning for Building Alliances Between a Maryland Community College and Employers." The George Washington University, 1984, (AAC8422780)

Wallace, S. R. "Influence of the Economic Development Program of a Comprehensive Community College on Business Decisions of Companies in Its Service Area." Claremont Graduate School, 1989. (AAC8914936)

Warford, L. J. "A Study of Customized Contract Training Programs at Selected Community Colleges." University of Oregon, 1989. (AAC8918957)

Weeks, A. A. "A Case Study of a Management Institute Model for Managing Contract Training at a Community College." Columbia University Teachers College, 1985. (AAC8602078)

White, R. E. "Community Development Through Industry and Education Partnerships: An Integrated Evaluability Assessment of a Cooperative Training Alliance Between Industry and an Urban Community College." Old Dominion University, 1987. (AAC8805591)

Young, S. V. "The Role of Lakeland Community College in the Economic Development of Lake County, Ohio, and Environs: College-Client Partnerships, 1967-1987." University of Akron, 1988. (AAC8804139)

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